JPRS 76590

9 October 1980

Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 65

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FRANCE, IRAN DISPUTE FUNDING OF NUCLEAR PLANT

NC200935 Paris AFP in English 0916 GMT 20 Sep 80

[Text] Paris, 20 Sep (AFP)--The French-Iranain dispute over joint funding for a uranium-enriching plant in France's Rhone Valley is being negotiated in "a good atmosphere," according to officials of Eurodif, the company that runs the plant. During the current Paris meetings of the general assembly of Sofidif (the French-Iranian organization for uranium enrichment by gas diffusion), which owns 25 percent of Eurodif, Iran's deputy minister for energy and director of the Iranian Atomic Energy Organization, (Fereidun Sahabi), has met several times with Eurodif directors.

The dispute follows Iran's decision to end its nuclear program and cancel orders made to France and West Germany by the ex-shah's regime. Eurodif, established in November 1973 to build the uranium enrichment factory at Tricastin, has not received promised funds from Iran since 1978. On October 24, 1979, the Parisian Court of Commerce authorized Eurodif to seize 9,000 million francs (2,250 million dollars) of Iranian assets invested in French state funds and the French Atomic Energy Commission. The commission had received, in 1974, a loan of almost 5,000 million francs (1,000 million dollars) from the Iranian Government in return for "entry rights" into Eurodif, access to nuclear technology and aid in nuclear development. In December 1979, France rejected Iran's demand for revocation of the seizure order. Iran then appealed and the decision, originally scheduled for July 9, has been postponed to October 22. The delay has afforded time for the talks and a possible prejudgment solution to the problem. A recent occurrence has led to optimism, for Iran said that it wants to "remove" its 10 percent of enriched uranium produced at the Tricastin plant. With its nuclear program shut down, Iran probably hopes to find a high-paying customer for the uranium.

CSO: 5100

U.S. HOUSE VOTES AGAINST, SENATE APPROVES URANIUM SALE TO INDIA

U.S. Approves India Shipment

BK250314 Delhi Domestic Service in English 0240 GMT 25 Sep 80

[Text] The U.S. Senate has voted in favor of shipment of 39 tons of enriched uranium to India for the Tarapore powerplant. The Senate refused to agree with the House of Representatives resolution which rejected President Carter's order authorizing the shipment. The House resolution was defeated in the Senate by 48 to 40 votes. The final vote took place late last evening after 2 days of discussions on all aspects of the Tarapore issue. The Senate has 100 members and all but six cast their votes.

The Carter administration has welcomed the Senate's approval to sell enriched uranium to India. A White House spokesman said the Senate action will help further the administration's policy of seeking to prevent nuclear proliferation.

House Voted to Block Sale

OW190846 Beijing XINHUA in English 0823 GMT 19 Sep 80

[Text] Beijing, September 19 (XINHUA)--The U.S. House of Representatives yesterday voted 298-98 to block the sale of 38 tons of enriched uranium to India despite the administration's repeated appeals for approval, according to reports from Washington. The Carter administration decided to license the sale last June on the ground that otherwise it would impair U.S. interests in the region and lead to the Soviet Union's substitution as a supplier.

Opponents to the sale reportedly based their case on the belief that India will use the fuel to make atomic bombs and also on Prime Minister Indira Gandhi's close relations with the Soviet Union, including a recent 1.6 billion dollar arms deal with Moscow. The United States has to supply nuclear fuel for India's Tarapur nuclear reactor, a U.S.-aided project, under an agreement signed between the two countries in 1963. Controversy began when India blast an atomic device in 1974, despite its claim that the explosion was for peaceful purposes. But it was reported that the administration's sale plan will go ahead unless the Senate also votes against it by September 27.

CSO: 5100

BRIEFS

MALAYSIA-U.S. AGREEMENT--The International Atomic Energy Agency, Malaysia and the United States have signed an agreement in Vienna. The accord is for the supply of a research reactor and uranium-enriched fuel to the Tun Doctor Ismail Atomic Research Center in Bangi, Selangor. The agreement was signed by the director general of IAEA, Dr Sigvard Eklund, the Malaysian ambassador to Austria, Encik Khor Eng Hee, and the American Ambassador, Mr Gerald Smith. Work at the reactor site is in progress and delivery of the fuel is scheduled for next October. The reactor will be used for training and research in nuclear science and technology and for the production of isotopes for various peaceful applications. [Text] [BK231340 Kuala Lumpur Domestic Service in English 1130 GMT 23 Sep 80]

SWISS ON PAKISTAN DELIVERY--Bern (DPA)--Switzerland considers the quarrel about nuclear energy with the United States, which has become public knowledge through American newspaper reports, as a "tempest in a teapot." The state secretary of the Swiss Foreign Ministry, Raymond Probst, used this terminology today during a press conference in Bern. Probst confirmed that at the end of August, Switzerland had been asked by the United States to comment on a secret American paper which talked about alleged new Swiss deliveries of nuclear materials to Pakistan. Examinations into this matter are now taking place on the Swiss side. After the conclusion of the examination, Switzerland will decide how the U.S. request for information will be dealt with. The impression in Switzerland was that the remarks in the American paper did not deal specifically with nuclear products, but with industrial products which could be used for various purposes. According to Probst, who until recently was the ambassador in Washington, the United States has not imposed a supply boycott on Switzerland, but has merely held back individual permits. [Text] [LD232010 Hamburg DPA in German 1801 GMT 23 Sep 80]

CSSR-USSR NUCLEAR COOPERATION--L. Strougal, chairman of the CSSR Government, has received in Prague S.A. Skachkov, chairman of the USSR State Committee for Foreign Economic Relations. During the meeting there was an examination of questions of intensifying economic cooperation between the Soviet Union and Czechoslovakia, including cooperation in the sphere of constructing nuclear power stations and manufacturing nuclear power engineering equipment in the CSSR. [Text] [LD181209 Moscow IZVESTIYA in Russian 28 Aug 80 Morning Edition p 5]

CSO: 5100

BRIEFS

ATOMIC ENERGY CHAIRMAN--Dr Anwar Hossain, Chairman, Bangladesh Atomic Energy Commission and Principal Investigator, Bangladesh Space Research and Remote Sensing Organisation (SPARRSO) formerly LANDSAT Programme, arrived in Dacca on Friday after completion of his four months programme as Member-Secretary to the Asian Regional Remote Sensing Mission at Bangkok, says an Atomic Energy Commission Press release. Dr Hossain, during this period, visited all ESCAP countries including Thailand, India, Malaysia, Indonesia, Philippines, Japan, South Korea, China, Vietnam, USA, France and Switzerland in connection with regional remote sensing programme sponsored by UNDP/ESCAP. [Text] [Dacca THE BANGLADESH TIMES in English 19 Jul 80 p 3]

CSO: 5100

GANDHI ANSWERS QUESTIONS ON NUCLEAR POWER

Bombay THE TIMES OF INDIA in English 17 Jul 80 p 5

[From the "Lok Sabha Questions" column]

[Excerpt] India would acquire 1565 Megawatts of nuclear power generation capacity by the end of the sixth plan (1980-85), the Prime Minister, Mrs Indira Gandhi, said.

The total capital outlay to achieve this would be Rs 800 crores, the Prime Minister said in a written reply to Mr P. K. Kodiyan.

Mrs Gandhi told the house that there was no proposal under consideration at present for carrying out a nuclear explosion for peaceful purposes.

However, if the need for such an experiment felt, "we shall go ahead with it," she said. [as published]

The Prime Minister said India had cooperation agreements in the peaceful use of atomic energy with Afghanistan, Algeria, Argentina, Belgium, Czechoslovakia, the Federal Republic of Germany, Hungary, Iran, Iraq, Italy, Libya, Poland, Romania, Syria, the United States, the Soviet Union and Yugoslavia.

She said the agreements had not so far resulted in the transfer of nuclear technology.

Mrs Gandhi said the government proposed to go ahead with the development of atomic power, notwithstanding the problems faced in the procurement of fuel and heavy water. She said in the Tarapur atomic power station, the main problem had been the regular supply of enriched uranium from the U.S. [as published]

The other atomic power projects, existing and proposed, were based on indigenous natural uranium, she said.

In the production of heavy water too, the Prime Minister said the government was planning for self-sufficiency.

Alternative to Uranium: The Prime Minister said investigations were in progress to find out an alternative to the enriched uranium being imported from abroad.

Heavy Water Plant: The heavy water plant at Baroda was expected to start regular production this month, the Prime Minister told the house.

She said the heavy water plant at Baroda, which suffered an accident in December, 1977, was being recommissioned.

CSO: 5100

BAN SUGGESTED ON MILITARY USE OF RADIOACTIVES

New Delhi PATRIOT in English 17 Jul 80 p 3

[Text]

INDIA has suggested that the committee on disarmament currently meeting in Geneva, agree on a convention to prohibit the use of all radioactive material for military purposes rather than on a treaty specifically banning radiological weapons according to a United Nations release from Geneva, reports UNI.

India's representative to the UN committee on disarmament Mr A P Vankateshwaran, called for a change of emphasis from radiological weapons to the prohibition of the military uses of all radioactive material as the committee met to consider new weapons and weapon system of mass destruction.

An ad hoc working group is currently engaged in negotiation on a radiological weapons treaty using as basic documents several proposals including a joint Soviet-American draft treaty.

Calling for a change of approach concerning radiological weapons, Mr Venkateshwaran said the joint Soviet-American draft would be interpreted as licensing the use of nuclear explosive weapons.

This would seem to suggest, he stressed that while it would be an offence to kill by radiation alone, it would be perfectly legal to kill by radiation, provided it was accompanied by blast and heat as in the case of nuclear weapons.

The proposed treaty must recognise in a suitable manner that the goal was to free this planet of all weapons that kill through radiation, whether caused by radioactive decay or through the fall-out from a nuclear explosive weapon he added.

CSO: 4220

REPORT ON BARODA, OTHER HEAVY WATER PLANTS

New Delhi PATRIOT in English 15 Jul 80 p 5

[Text] The heavy water plant at Baroda which was shut down after an accident in 1977, is likely to resume commercial production shortly, Government officials said on Monday reports UNI.

The accident, caused by a "mechanical failure", has cost about Rs 2.55 crores so far, including Rs 1.1 crores on revamping the plant, officials at the Atomic Energy Department said.

They told UNI that the plant has been revamped now and tested. "We expect it should start commercial production well before the year is out."

The Baroda plant was set up five years ago at a capital cost of Rs 34.17 crores with a capacity to produce 67.2 tonnes of heavy water a year.

Two other plants are in operation at Nangal and Tuticorin and two more are expected to begin operating at Kota and Talcher in a year or two, the officials said.

Department officials said the Government proposes to set up more heavy water plants to achieve self-sufficiency, but has not yet decided on their number or location.

India has since 1976 imported more than 200 tonnes of heavy water from the Soviet Union under contracts for supply of 456 tonnes of the material.

CSO: 5100

SAFEGUARDS ON SOVIET HEAVY WATER MAY NOT APPLY

Calcutta THE STATESMAN in English 23 Jul 80 p 9

[Text] The international safeguards on the Soviet-supplied heavy water to the Rajasthan atomic station will not apply once India produced an equivalent amount of heavy water from its indigenous plants and placed that under safeguards as a "substitute," reports PTI.

This provision has been made in the agreement signed between India and the International Atomic Energy Agency on November 17, 1977.

Similarly the safeguards on the nuclear material (plutonium)produced in the U.S.-built Tarapur atomic station will be removed once India placed an equivalent quantity of the same type of material under the scope of the agreement it signed on January 27, 1971 with the IAEA and the USA.

The safeguards agreement relating to the two atomic stations were laid on the table of the Lok Sabha on Monday.

According to the safeguards agreement on the Tarapur station, the safeguards will not apply once the Indo-American agreement on Tarapur (signed in August 1963) is terminated by any party upon six months' notice to the other parties.

As far as Rajasthan Atomic station is concerned, India has agreed that the Soviet-supplied heavy water "shall not be used for the manufacture of any nuclear explosive device."

The India-IAEA agreement on Soviet-supplied heavy water covers both RAPP-1 and RAPP-2 reactors of the Rajasthan power station.

CSO: 5100

WORK ON ALL ATOMIC PROJECTS REPORTED BEHIND SCHEDULE

Bombay THE TIMES OF INDIA in English 21 Jul 80 p 7

[Text] New Delhi, July 20 (UNI). Work on almost all 12 major projects of the atomic energy department now being executed is much behind schedule, according to official sources.

And their costs, in many cases, have more than doubled.

The projects range from research reactors, radio chemistry laboratory and nuclear fuel complex to heavy water units and an atomic power station, the sources say.

At least half of these projects have been delayed for more than four years. These include the one now expected to be completed next year--eight years late.

Most projects are bedevilled by late component deliveries, poor availability of building and raw materials and time-consuming processes of foreign collaboration. Nature, too, plays its part.

A heavy storm at sea some years ago blew away two towers from a ship which was bringing them from Europe for a heavy water project at Talcher, Orissa. The towers were reordered.

Oil crisis hampered deliveries of raw materials to the Talcher project and lackadaisical indigenous fabricators took their own time supplying components.

Added to these were delays in finalising certain changes in a contract with the project's foreign collaborators. The result of it all: the project which should have been accomplished in four years, has already taken eight, and is now expected to be completed next year.

Its cost, which was projected in 1972 at Rs 21.10 crores, is now estimated at Rs. 57 crores.

Some of the other projects to suffer included an atomic power station (unit II) in Rajasthan, work on which began in 1967 and should have been over in 1973.

The authorities are now optimistic that it will be ready this year.

But even if that happens, the Rajasthan project would have cost, by current estimates, a cool Rs 38 crores more than the originally fixed Rs 56 crores.

The project, the sources said, had also suffered delay because of embargo "imposed by certain countries" on supplying specialised equipment to India.

The certain countries which the sources again won't name, presumably included Canada which refused to sell nuclear equipment to India after the 1974 Pokharan blast.

An atomic power project in Madras, with two units, also faced similar snags. As a result, the first unit, which was to have been ready in 1973, may now be completed next year, and the second unit may be completed in 1983 instead of the originally scheduled 1976.

The costs of the two units, earlier estimated at Rs 132 crores, is now put at over Rs 211 crores.

Another atomic power project, at Narora in Uttar Pradesh, work on which began in 1976, was scheduled for completion in 1982 at a cost of Rs 209.89 crores.

But thanks to the delay in manufacture of some critical nuclear equipment and design changes not originally contemplated, the plant may not begin operation for at least four or five years. It is expected to cost Rs 327.40 crores by current estimates.

A fast breeder test reactor at Kalpakam is already six years behind schedule because of delay in reaching agreement with foreign consultants and Indian manufacturers.

The project cost has been scaled up from Rs 34.85 crores in 1971 to Rs 58.22 crores at present. The reactor should begin operating in two years, the authorities expect.

The execution of a waste immobilisation plant at Tarapur has been hit by lack of skilled technical personnel and lack of residential quarters for project workers.

The plant which should have been in use this year would now be ready in two years at nearly double the cost initially project at Rs 3.95 crores. [as published]

Finishing touches seem to have held up another couple of facilities--a radio chemistry laboratory and a radio metallurgy laboratory.

Two other atomic projects which have suffered inordinate delays are a ball-bearing tube plant for a nuclear fuel complex, Hyderabad, and a research reactor (R5) (R Cap), at the Bhabha Atomic Research Centre, Trombay.

The fuel complex should have been completed last year, but the authorities hope it will be ready this year, though at a cost more than double the initial estimate of Rs 23 crores.

CSO: 5100

BRIEFS

FUEL REPROCESSING PLANT--New Delhi, July 17--The Department of Atomic Energy is setting up another fuel reprocessing plant at Kalapakkam near Madras. According to DAE's performance report, it is being set up to reprocess fuel from reactors of the Madras atomic power station and the fast breeder test reactor. Expected to be completed by 1987, the plant will cost Rs. 35 crores. It will be the third fuel reprocessing plant under DAE. One is at Trombay for reprocessing spent fuel of research reactors, and the other is at Tarapur for recovering plutonium from the spent fuel of Rajasthan and Tarapur power reactors.--PTI [Text] [Madras THE HINDU in English 18 Jul 80 p 9]

CSO: 5100

BRIEFS

RADIOACTIVE WASTE LEAK--Mito 30 Sep (KYODO)--A leak occurred at the Japan Atomic Energy Research Institute's radioactive waste treatment facility at Oarai, Monday, but the waste was immediately recovered without any damage to the environment, the institute said Tuesday. Some 100 liters of radioactive waste water containing five kinds of nuclides, including tritium and cobalt-60, leaked from a pipeline seam while being transferred to a tank for chemical disposal, the institute reported. Officials believe the joint could not bear the water pressure. The leak, however, was about half the legally permissible level, they said. [Text] [OW301033 Tokyo KYODO in English 0729 GMT 30 Sep 80]

CSO: 5100

CONSTRUCTION OF NUCLEAR POWER PLANT RESUMES

OW250735 Hong Kong AFP in English 0556 GMT 25 Sep 80

[Text] Manila, 25 Sep (AFP)--Construction of the controversial Philippine nuclear power plant officially resumed today, 15 months after the government suspended the project over questions concerning safety and in the face of a tightening oil squeeze. The country's first nuclear plant will now cost some $800 million more than the orginal $1,100 million contract price due to additional regulatory instrument costs and accumulated interest dues.

Energy Minister Geronimo Velasco told newsmen today that the plant includes 53 new regulatory guides, including nine Three Mile Island-related improvements and two concerns raised by the International Atomic Energy Agency (IAEA). Most of these are additional monitoring and instrumentation equipment, bringing the total number of regulatory guides to 102.

Westinghouse Nuclear Energy Systems, contractor of the 620 megawatt plant, will shoulder the costs of the additional safety requirements although the Philippine Government will pitch in $4 million representing one half of the cost of the Three-Mile Island-related improvements, Mr Velasco said.

The project resumes in spite of a pending appeal by anti-nuclear groups both here and in the U.S. to stop the project. Last year, a three-man review board ruled that safety guides in the plant were inadequate after a three-month hearing on opposition charges that the plant was located on an earthquake zone and its design and the technical capability of the Philippine Power Corporation were inadequate to deal with emergencies. At the same time the U.S. Nuclear Regulatory Commission (NRC) had suspended the granting of an export license to Westinghouse over concerns raised by the International Atomic Energy Agency on the Philippine project. However, following a U.S. NRC ruling early this year that they need not consider the health and safety aspects of exports, Westinghouse was granted an export license for its nuclear components last May 1880.

Minister Velasco told newsmen that the safety guidelines were on par with those required by the U.S. NRC in their own nuclear plants. He said that they do not have final plans for nuclear waste disposal, but storage space the size of three Olympic-size swimming pools can carry spent fuel wastes up to 10 years. By then they hope the industrialized nations would have found ways of better disposing of nuclear wastes.

CSO: 5100

BRIEFS

STATEMENT ON NUCLEAR WEAPONS--Premier Sun Yun-hsuan Friday reiterated that the Republic of China's policy is to not produce nuclear weapons. He made the statement in reply to interpolations from legislator (Chien Lien) at the Legislative Yuan. Premier Sun said however, that the Republic of China will keep strengthening the research and development of nuclear science for peaceful applications. The government will increase the full-scale development of nuclear generation. [Text] [OW211307 Taipei International Service in English 0100 GMT 20 Sep 80]

CSO: 5100

BRIEFS

POLAND-USSR ENERGY COOPERATION--In keeping with an agreement signed with the Soviet Union, Polish enterprises will participate in the construction of three nuclear power stations in the Soviet Union in exchange for supplying Poland with large amounts of electric energy. Polish specialists are already working at the sites of the Smolensk, Khmelnitskiy and Kursk nuclear powerplants. Their work and the various energy installations will be paid for by the supply of 1.2 billion kwh of Soviet electrical energy in 1984, twice as much in 1985, and 6 billion kwh a year between 1980-2003. The overall supplies will exceed 100 billion kwh. [Warsaw TRYBUNA LUDU in Polish 19 Sep 80 p 2 AU]

CSO: 5100

BRIEFS

URANIUM PRODUCTION DIFFICULTIES--The production of the uranium mine in Hamr near Ceska Lipa is expected to increase by 14.8 percent in the course of the Seventh 5-Year Plan. Chemical extraction in the mine is being carried out under extremely difficult geological conditions: To increase the production of the chemical concentrate by 3 percent, it is necessary to process 47 percent more raw materials. [Prague MLADA FRONTA in Czech 6 Sep 80 p 1 AU]

CSO: 5100

BRIEFS

CONCENTRATION PLANT OPENS--Bolivia has begun producing uranium in semi-industrial quantities. The minister of energy and mines and officials of the Bolivian Nuclear Energy Commission, COBOEN, inaugurated the uranium concentration plant in Cotaje mine, Potosi Department last Thursday. The plant will produce from 60 to 70 percent uranium of commercial value. The new installation will produce 4,000 kg of uranium per year with 8 hours of work daily. The investment made to build the plant reached $500,000. We should point out that the design and assembly of the plant was by Bolivian technicians. COBOEN director Capt (Edgard Andobus) said that this is a special occasion in Bolivia because semi-industrial production of uranium in large quantities has begun. This shows an effort by and patriotism of Bolivian technicians who have demonstrated that there are no great differences between Bolivian technology and the technology of other countries. The current price of uranium is $100 per kilogram; therefore, it can be predicted that this income will guarantee the continuity of the country's uranium program. [Text] [PY201641 La Paz Radio Illimani Network in Spanish 1130 GMT 20 Sep 80]

CSO: 5100

BRIEFS

URANIUM POTENTIAL--The government has initiated large-scale exploration to locate uranium to be used as an alternate energy source. A government spokesman indicated that probable uranium reserves have been detected in Caldas, Huila and Santander Departments, among other areas. The official said that should a deposit of commercial value be discovered, it would only go into activity after approximately 4 years. [Bogota Domestic Service in Spanish 1730 GMT 3 Sep 80 PA]

CSO: 5100

EXPERTS ASSESS IRANIAN ATTACK, IRAQI NUCLEAR PLAN

TA302022 Jerusalem Domestic Television Service in Hebrew 1900 GMT 30 Sep 80

[Text] Security elements this evening tried to assess the influence of the Iranian attack [on the Iraqi nuclear facility] on the process of Iraqi nuclear arms development. Military correspondent 'Amiram Nir reports on the Iraqi nuclear plan, the timetable for the appearance of nuclear arms in the region and on the possible blow this may be dealt following today's events:

The Iraqi nuclear reactor, Tammuz 1, which is being built in the small town of (At-Tawita) on the banks of the Tigris River, is considered the gravest strategic threat to the stability of the Middle East in the coming decade. The nuclear reactor in question is of the Osiris type, supplied by France to Iraq. This is a medium-size reactor which requires at least 12 kg of U-235 enriched uranium for its operation. In addition, France is building for the Iraqis a small, experimental nuclear reactor of the Isis type, requiring 8 kg of enriched uranium, that will serve for the training of Iraqi engineers and technicians. Each of the reactors separately, if operated with the minimum required uranium, is not capable of producing real nuclear arms. However, if the Iraqis combine the quantities, 12 and 8 kg, they will be able to produce a bomb. So far the French have already supplied the Iraqis with two shipments of enriched uranium which make possible the operation of both reactors. According to the planned timetable the French were supposed to complete the building of the reactor by the end of last year after Iraqi experts had trained in France so as to participate in the building. However, 1 and 1/2 years ago a mysterious explosion took place in the French plant and the core of the reactor was destroyed. Therefore, the supply of the parts to Iraq began only in February 1980. An Egyptian nuclear scientist who trained in the Soviet Union and worked for the Iraqi atomic energy agency was murdered in Paris 4 months ago. This naturally marred the process of training the manpower necessary for the operation of the reactors. However, despite all this, the Tammuz 1 reactor was supposed to start operation in about 3 months. According to the schedule, French experts were supposed to supervise the work of the reactor until 1982 and then the Iraqis were supposed to take over control. It is estimated in Israel that, according to such a schedule, an Iraqi nuclear bomb may be ready in the mid-1980's. Will the Iranian air attack distupt this worrisome timetable? Israeli experts estimated this evening that even if only the living quarters and the work areas were hit and no damage was caused to the structure and core of the reactor that is being set up, the operation will be delayed for at least a few months, half a year perhaps, until the infrastructure is rebuilt. All this naturally depends on stabilization of the security situation in the region. The more important question is "Will the Iranians settle for this? It is believed in Israel that the air attack reflects not only an escalation in the fighting but also Iranian recognition of the long-term danger inherent in an Iraqi nuclear potential. Therefore, Israeli experts believe that the Iranians, who enjoy air superiority, may try their luck again.

CSO: 5100

NUCLEAR REACTOR CONSTRUCTION URGED

Tel Aviv HA'ARETZ in Hebrew 27 Jul 80 p 10

[Article by Eli El'ad: "What is Delaying the Nuclear Reactor"]

[Text] The development of a new "nuclear awareness" among scientists and technologists at institutions of higher learning in Israel has become apparent. It is characterized by the attitude that Israel must immediately proceed towards construction of its first nuclear reactor for electrical power generation: our lives depend upon it. Technion president Amos Horev, Professor Shim'on Yiftah (who has supported nuclear power generation for some 10 years), and others, have been joined by Beersheba and Tel Aviv University scientists and those at other institutions.

Common sense supports the demand to proceed immediately with firm plans for the construction of the nuclear reactor.

The argument presented runs something like this: In order to reduce her dependence upon imported oil, available primarily from hostile nations, Israel must switch to alternative energy sources. The Electric Company is the single largest oil consumer in the country, today utilizing more than a third of Israel's annual oil supply. This is almost the only aspect of Israel's oil consumption which could and must be changed at the present time. The first step in this direction is the change over to coal.

Serious Problems

The new power plant being built at Hedera, whose first unit will be operational within a year, will, by 1983 upon completion of all four of its units, produce 40 percent (1,400 megawatts) of the country's electric usage. The next station planned for operation after the Hedera station will produce 1,100 or 2,200 megawatts and will be operational in the second half of the 1980's. It will also be a coal-operated plant. The Electric Company is requesting the site of Ziqim, south of Ashkelon, for this plant. Unlike oil, most of the world's coal reserves are located in countries friendly to Israel. Israel has contracts for coal purchases for the Hedera plant with Australia and South Africa. Coal purchases from the U.S. are currently being negotiated.

despite the reasons offered in support of the nuclear reactor project, there remain serious political, economic and security considerations, each of which undermines its implementation.

The Electric Company has exclusive rights to all electric power production and distribution in Israel. It supported the plan for a nuclear power plant almost from its inception, together with the Israel Atomic Engery Commission, but has remained silent in the latest round of support for nuclear-generated electrical power. The chairman of the Electric Company's managerial committee, Mr David Shiffman, says: Although there has been a slowdown in planning on this project, primarily due to political problems, we still support a reduced staff so that if and when the go-ahead is given, we'll be ready. Mr Shiffman notes that as a result of new planning for a nuclear plant started in 1974, equipment specifications were prepared and the subsequent proposal was answered by three U.S. companies. In 1976, bids were received from the U.S. companies and a memorandum was signed with Westinghouse for provision of the reactor, pending a political agreement. A letter of intent, which has legal implications, was not signed.

Deep Freeze

However, these 1976 plans for a nuclear power plant later reached a near halt. According to the Electric Company's managerial committee chairman, the U.S. Government doesn't allow the sale of nuclear facilities by any company until there is a political agreement for inspection. It is hindering progress on this first nuclear project, pending such an agreement.

In his estimation, the recent support for a nuclear plant on the part of the Israeli scientific community is primarily encouraged by the fact that there are other countries in the world producing and selling reactors. Serious consideration should, according to this view, be given to breaking away from dependence upon the U.S. and proceeding, independently and with the assistance of other countries, on construction of the reactor.

Israel's problem is not only who to ask for help, but how to finance the reactor as well. The negotiations with the three American companies which submitted proposals to the Electric Company, Babcock Wilcox, General Electric and Westinghouse, revolved partly around the question of financing. Shiffman says that the Americans agreed to terms which allowed for financing of the tremendous cost of the reactor, provided that the political problems be solved. He considers it probable that the American companies would apply pressure at home, so as not to loose Israel as a customer if Israel actively pursued its option to build the reactor.

Developments

Two years ago, says Shiffman, the Electric Company sent a delegation to the U.S., Canada, and one European country in order to update information for the nuclear plant. The report the delegates submitted on their return noted that the U.S. continues to lead among countries producing nuclear reactors, both in total experience and utilization of the most advanced technology, through progress has been made in this field by other countries, two of which could be considered as potential suppliers for reactors.

At what stage is site preparation for construction of the plant? Despite developments subsequent to the seemingly definite 1976 plan for purchase from Westinghouse of a 600 megawatt reactor, to be followed by a 900 megawatt reactor, progress has been made in site preparation.

The Halutza site, located in the western Negev far from the sea, has taken precedence over the originally proposed Nitzanim site. A report was issued summarizing geo-technical findings revealed by thorough investigations over a 3 year period at the Nitzanim site. This study, which cost tens of millions of IL, led the Israel Atomic Energy Commission to conclude that an alternative site should be sought. While the Electric Company believed that the report verified the acceptability of the Nitzanim site, the Atomic Energy Commission did not accept the findings and demanded additional surveys. Since then, several additional tests were conducted at Nitzanim, but today the Halutza site is prefered and it is here that most of the testing is being carried out. The Halutza site, unlike Nitzanim, is not close to densely populated areas. But Halutza's distance from the sea would necessitate unconventional cooling systems. Today, geologic, seismic and meterorological tests are being carried out at Halutza and suitable cooling mechanisms are being examined: dry cooling towers or piped-in sea water are under consideration.

The Size of the Plant

Another change in planning is related to the size of the plant. The original plan calling for a 600 megawatt plant, and later a 900 megawatt plant, was economically advantageous based on the electric power producing network's needs as of planned completion in 1985. Today, with completion scheduled in the 1990's, over 10 years from now, a 1,200 megawatt unit is under consideration. The size of the plant will be the subject of intensive research after the project becomes more realistically feasible.

Determination of the type of reactor, enriched uranium and natural water (the American reactor) or natural uranium and heavy water (the Canadian reactor), awaits further study. The cost of a nuclear power reactor in the 1,200 megawatt range, plus financing costs, is in the vincinity of U.S. $1.2 billion.

The Electric Company, Mr Shiffman says, has not ceased its own activities on this project. The company maintains a reduced staff and spends a considerable amount of money for the continuation of testing and planning at the Halutza site. After the Zikim site, where it proposes to erect four coal-powered units of 550 megawatts each at a total expenditure of approximately U.S. $1 billion, the Electric Company forsees its next power plant as a nuclear facility.

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MOROCCO

BRIEFS

COUNTRY BECOMING 'NUCLEAR POWER'--Rabat, September 22 (XINHUA)--"Morocco is growing into a nuclear power, for it has the raw material," declared Moroccan King Hassan II at a press conference yesterday evening. By the end of 1981, he noted, Morocco shall have produced quite an amount of uranium. "I don't see why people should prevent Morocco from becoming a nuclear power, a peaceful nuclear power," he said. The country's first uranium refinery is being built at Safi, a chemical industry city. [Text] [OW230308 Beijing XINHUA in English 0250 GMT 23 Sep 80]

CSO: 5100

OPERATION OF THERMOS URBAN HEATING REACTOR DESCRIBED

Paris CEA NOTES D'INFORMATION in French May 80 pp 3-10

[Text] Construction of an initial swimming-pool-type demonstration reactor, Thermos, intended primarily for urban heating, is being contemplated. TECHNICATOME[1] [Atomic Energy Technical Company] has been conducting supplementary studies for the last 2 years, for the purpose of improving the characteristics of an initial project submitted as early as 1977.

The new characteristics were chosen for adaption to urban heating networks, which, according to the recommendations of the Study Commission for Heat Utilization, should be directed toward using hot water at a relatively low temperature (on the order to 90° to 120°C) in order to be able also to make use of heat given off by industrial facilities, geothermal heat and, when possible, hot water coming from nucleoelectric powerplants.

Urban heating networks can provide heating for large centers of population under satisfactory conditions of national independence and environment. They also supplement the use of solar energy.

Moreover, this kind of facility makes it possible to produce fresh water on the basis of nuclear energy in countries lacking drinking water resources. Thermos is able to prepare countries concerned with the energy future for nuclear techniques by minimizing investment costs, delays and costs of operation in comparison with other solutions based essentially on the production of electricity.

The evolution of fossil fuel prices is improving the ability of this kind of reactor to compete with traditional solutions.

In view of the interest shown by several European countries in the Thermos reactor, a subsidy from the European Communities was requested and obtained within the framework of its program of support of demonstrations making energy savings and a decrease in dependency on oil products possible.

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[1] TECHNICATOME: subsidiary of [French] AEC (90%) and EDF [French Electric Company] (10%).

After a comparative study made by TECHNICATOME of the various nuclear sites existing at present apt to be suitable for accomplishing a demonstration of 100 megawatts thermal, the AEC is contemplating proposing the Grenoble Nuclear Studies Center on a priority basis, because that plant would make it possible to connect the facility with the heating network of the city, the next largest in France after Paris, and, as an alternative, the Saclay Nuclear Studies Center where a distribution network would then be set up for outside utilisation.

Advantage and Future Prospects of Thermos

In France, 33 percent of the primary energy consumed in 1979 was devoted to the residential and tertiary sector. Heating uses 30 percent of the oil imports. These widely known figures show the urgency attached, from the point of view of national independence, to reducing our energy imports in the area of heating and therefore to calling first of all for savings and to conducting research on new sources of usable heat, at the same time. Geothermal energy and solar heating are among these new sources. Production of hot water by a nuclear reactor is another. There is no competition between these courses, each of which, moreover, has its chosen field. The AEC's calling is to study the third course, the nuclear course, which seems to be an interesting option, and to determine, by means of the demonstration reactor, its operating conditions and its economic advantage.

Hot water at 120° is of interest to two main markets:

Urban heating and, secondarily, air-conditioning.

Industrial heat for certain purposes: solution evaporation, manufacture of pulp, production of fresh water by evaporation or distillation of seawater, and so on.

In view of this demand, what is the future of the nuclear boilers developed by the AEC under the name of Thermos?

Characteristics of Delivered Heat

This problem is primarily economic. Because heat is distributed relatively poorly, the production facility must be scaled for local demand, that is to say demand expressed in a radius of several kilometers. Now, the cost of energy produced by a nuclear reactor depends greatly on its size, that is to say its power. If a power exceeding a certain threshold value can be found in that radius, the reactor is competitive.

This threshold depends on the technology used and of the objective sought. Thus, for the production of electricity, the threshold of profitability of a pressurized water reactor is on the order of 500 megawatts electric, or 1,500 megawatts thermal, at present and under French conditions. This explains why EDF 900-megawatt electric and then 1,300-megawatt electric powerplants are economically advantageous.

The threshold of profitability of a heat-generating reactor for the production of heat, technically much more simple, is much lower. Of course, this treshold is sensitive to conditions of competition and, especially, to the price of oil. If, as the experts fear and as has been shown very recently, prices should undergo further increases during the next decade, the threshold would be lowered.

The 100-megawatt thermal project was subjected to complete, detailed study. Determination of its power was the result of a compromise between the possibilities for connection to French-type networks.

The reactor has been designed to heat the following up to a temperature of 120°C, if necessary:

Water of an urban heating network.

Seawater for a distillation plant.

Water for an industrial system.

Temperature is, without doubt, the most important parameter to determine, because it directly affects the pressure of the primary circuit and the behavior of the reactor. Choice of 120°C is the result of a compromise between two desires:

The desire to interest a large market. This promotes an increase in temperature level.

The desire to stay within moderate pressure ranges, making it possible to use a simple, cheap system and making it possible to provide emergency cooling of the reactor by passive means.

The 120°C temperature seemed to be a good choice, because it makes it possible to have access to the urban heating market of the great majority of existing or future European networks. Of course, in this case, the reactor is supposed to furnish only the basic heat of the network, which is assumed to be controlled in temperature depending on the demand for power. It is necessarily coupled to cheap, fossil-fuel boilers performing a triple function:

Emergency function.

Preliminary function during the first period of development of the network when the demand for power is still insufficient to justify construction of a nuclear facility.

Auxiliary function during very cold periods, not very frequent or of short duration.

This 120°C temperature makes it possible to meet the requirements of every existing or contemplated desalination plant. The chemical seawater treatment processes used or usable actually require temperatures below 120°C, at the plant's leading heat exchanger.[2] In addition, it has been possible to record a number of industrial applications at this temperature level, with or without modification of the usual processes.

The power level studied is also the result of a compromise between the following opposite requirements:

The market encourages availability of moderate-sized heat sources. In the French climate, 100 megawatts thermal make it possible to heat the equivalent of a city with 50,000 to 70,000 persons. Two hundred megawatts thermal is a power in excess of the needs of the French market, but it makes it possible to interest a number of colder countries having more extensive networks.

One hundred megawatts thermal also make it possible to obtain from 30,000 to 40,000 cubic meters of fresh water a day in desalination plants. It does not seem that powers in excess of 250 megawatts thermal (100,000 cubic meters a day) should be considered, because they are too exceptional. In case there should be a demand for larger amounts of water, it is probably preferable to have two reactors on the same site.

Finally, the range from 100 to 200 megawatts thermal seems to be the one most advantageous.

The French Market

In our country, 100 megawatts thermal make it possible, as has been said, to satisfy the heating requirements of a population of from 50,000 to 70,000 persons (basically, that is to say outside peaks representing about 10 percent of the annual consumption) (figure 1). Because present construction policy does not encourage the establishment of new towns and because other types of energy used (gas, electricity and so on) that are undergoing their own development must be taken into account in existing towns, it is observed that the nuclear solution can be contemplated, under these conditions, in France, only for cities with around 200,000 inhabitants. Various systems have been studied with several companies specializing in heating studies for a few cities of this size and the operations have been judged feasible.

The nuclear boiler will be constructed near a fossil-fuel boiler supplying the urban heating network. The traditional boiler provides heat as an auxiliary during the heaviest heating times and during periods of reactor shutdown. Figure 2 gives an overall sketch of a Thermos-type plant.

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[2] It is also possible to produce electricity with small freon turbines by using the secondary circuit of the reactor as a source of heat and seawater as a cooling source.

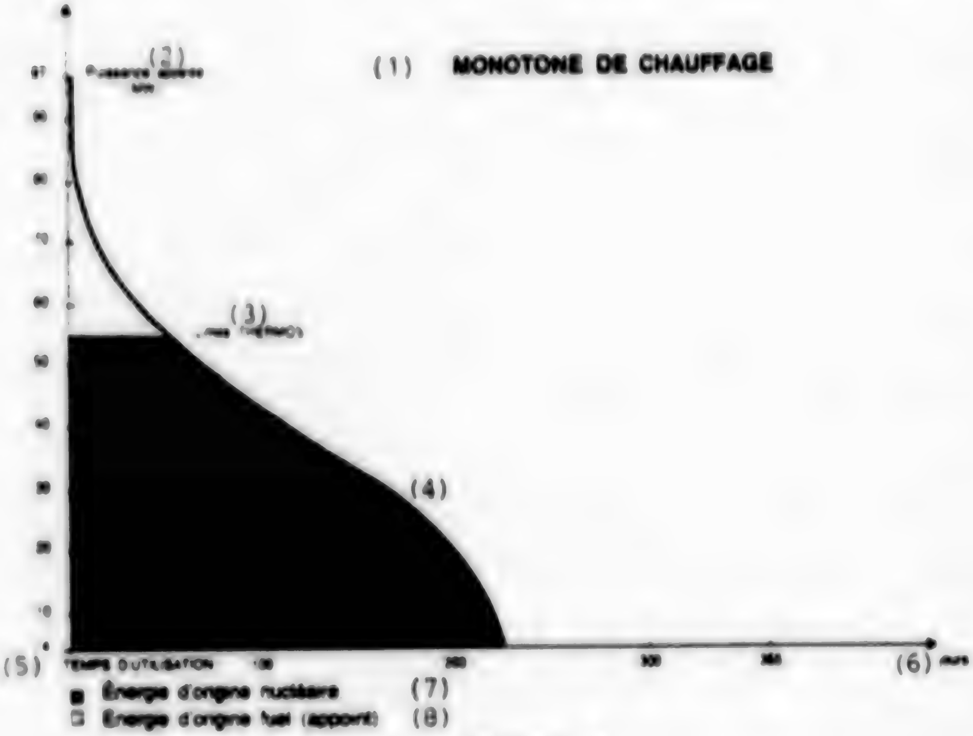

Figure 1

Key: 1. heating monotone; 2. power called for; 3. Thermos limit; 4. Thermos production; 5. utilization time; 6. days; 7. energy of nuclear origin; 8. energy of fuel origin (auxiliary)

With regard to the French industrial market, outside domestic uses, an analysis shows that it would not add more than a few units to the ones on the urban heating market. The number of Thermos reactor sites could hardly exceed around 20, in France, between now and the end of the century, or the equivalent of the number of EDF nuclear sites, but with around a hundred times lower installed thermal power per site. About 20 reactors would make it possible to save a million tons of oil. This is not a large amount with regard to our present imports, but it is not negligible and the hope of taking this step toward energy independence justifies concrete experimentation with the demonstration reactor.

Export Market

A number of countries have developed urban heating to a considerably greater extent than in France, ten times more per inhabitant for example. That is true of the Scandinavian countries and the countries in the East for reasons of climate and sociology. In those countries, reactors producing 200 megawatts thermal or more might be included in a large number

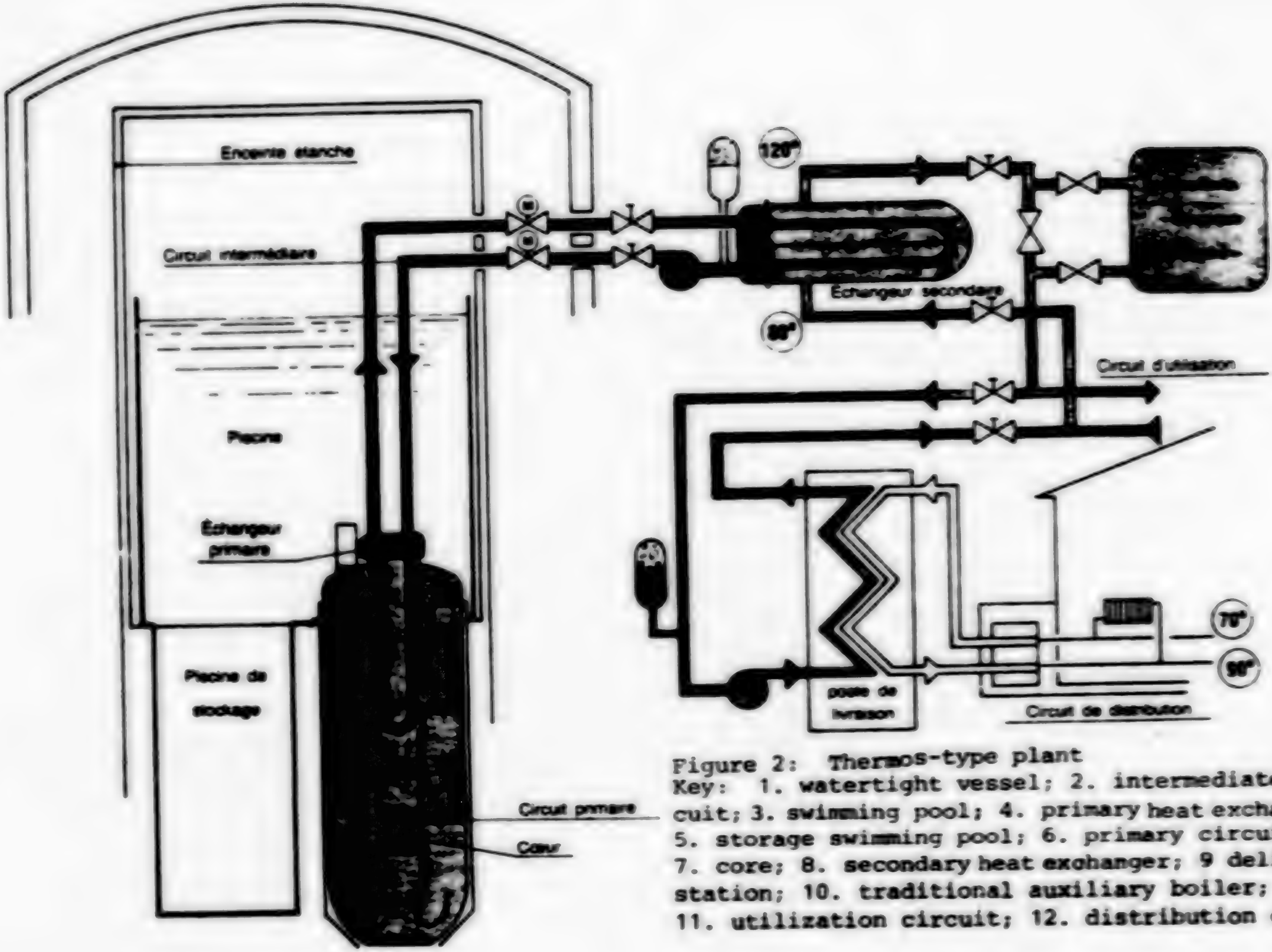

Figure 2: Thermos-type plant
Key: 1. watertight vessel; 2. intermediate circuit; 3. swimming pool; 4. primary heat exchanger; 5. storage swimming pool; 6. primary circuit; 7. core; 8. secondary heat exchanger; 9 delivery station; 10. traditional auxiliary boiler; 11. utilization circuit; 12. distribution circuit

of sites. Moreover, the characteristics of the heating networks currently used make it possible to cut in the Thermos reactor under still more advantageous conditions than in France where, for various reasons, the networks already in operation carry water at a higher temperature (180° to 200°C).

Some heating reactor projects are under study in Sweden and in the Soviet Union and contacts have been made between those countries and France, opening up interesting collaboration prospects.

Finally, the urban heating market is not the only one involved, as we have already said. The most promising foreign industrial market is, at the present time, the desalination market. Thermos is able to produce from 30,000 to 40,000 cubic meters of fresh water a day using seawater. Now, it is interesting to note that in 1977 the world production capacity of desalination plants in operation or on order increased from 3.1 to 4.7 million cubic meters a day.

Technical Characteristics of the Thermos Reactor

The following are the basic ideas governing the design of the reactor:

Utilization of simple, known methods that have proved their worth especially in swimming-pool-type research reactors used by the AEC a very many years with excellent availability.

None of the components, none of the subassemblies has been subjected to high stresses. Quite the opposite, all during the design period an attempt was made to operate always within acceptable performance and to mark components below maximums.

Safety obtained by passive means requiring no intervention by the personnel before several days, even in scenarios of the most serious hypothetical accidents taken into account.

Very slight production of radioactive effluents that will, moreover, be concentrated on the spot before evacuation and that will not be released into the environment.

Small number of operating personnel.

Very good thermal yield.

The primary circuit water is contained in stainless steel vessel 4 to 5 meters in diameter. Its walls are quite far from the core, in order not to be activated. Dismantling the plant at the end of reactor's period of operation will, therefore, not give rise to any difficulty, because the concrete and the principal steel structures remain inactive all over. Direct inspection of the vessel by the personnel is possible after taking down the internal structures, small in volume, and after draining the water into storage reservoirs.

The reactor's core consists of uranium oxide plates enriched to 3 or 4 percent in ^{235}U contained in zircaloy sheathing, in accordance with a technology developed by the AEC that ensures gastightness of the sheathing during the entire life of the fuel (4 to 6 years, depending on the number of hours of utilization a year).

Figure 3 shows a general cross-section of the plant. The vessel is suspended at the bottom of a swimming pool kept filled with water at a low temperature (around 35°C).

The swimming pool, which also cools the fuel elements during deactivation before transportation in a lead cask, is surmounted by various necessary means for handling. It includes two compartments that can be isolated from each other by a caisson. Two concentric cylindrical concrete enclosures protect its access and contain the various auxiliary spaces like: filtering circuits, decontamination rooms, control room, and so on. The outer enclosure is designed to hold up under outside attacks, like the fall of an aircraft, for example.

The swimming pool water (around 600 cubic meters in volume) is an immediately available emergency source for cooling the core. It makes it possible to keep the core under water, even in the very theoretical case of a large leak from the vessel and it retains most of the dangerous fission products that might be emitted if a hypothetical accident occurs.

The most important chacteristics of the plant with a power of 100 megawatts thermal are shown in the following table:

Principal Characteristics

Power:

100 megawatts thermal
Power drawn off by air cooler: 1 megawatt
Thermal yield: 99 percent

Primary Circuit:

Maximum pressure core output: 10.5 bars
Temperatures: 126°-130°C

Intermediate Circuit:

Temperatures: 96°-126°C

Water Distribution Network:

Outgoing temperature: 120°C

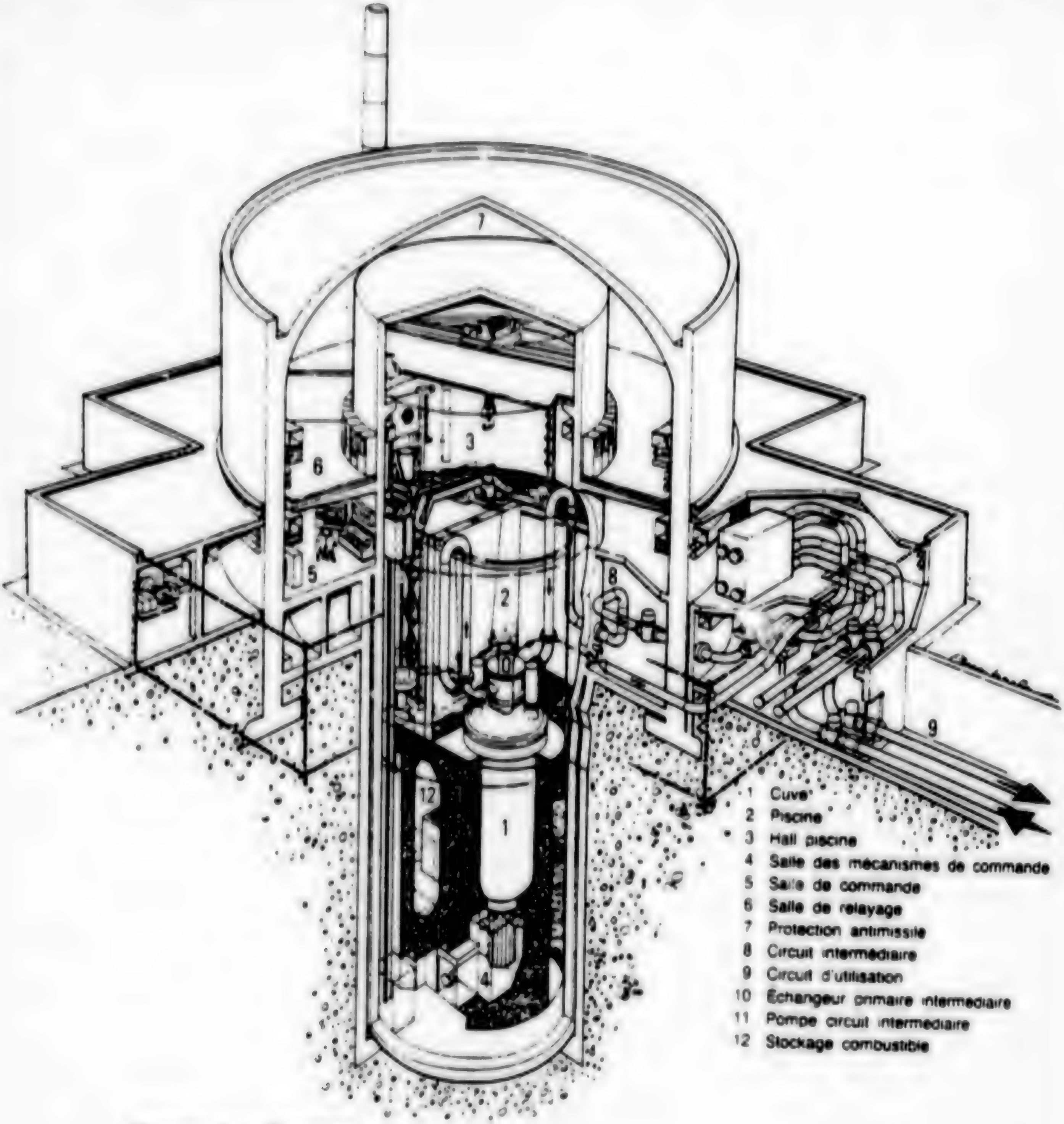

Figure 3 Thermos

Key: 1 vessel; 2. swimming pool; 3. swimming pool access; 4. control mechanisms room; 5. control room; 6. relay room; 7. antimissile protection; 8. intermediate circuit; 9. utilization circuit; 10. intermediate primary heat exchanger; 11. intermediate circuit pump; 12. fuel [element] storage

Core:

Uranium mass contained: 3.1 metric tons
Enrichment: 3 to 4 percent in ^{235}U
Reloading: by one-fourth or one-third of the fuel elements every 2 years

Dimensions:

Inside diameter of dome: 24.5 meters
Dome height: 16 meters
Largest dimension on the ground: 44 meters

Environment Protection

The Thermos reactor has been designed so that, in normal operation, it cannot harm the environment and so that, even in the very little likely case of an accident, its effect will be minimum and no population evacuation will be required in any case. Superimposition of original ideas on the rules governing this kind of plant (three barriers, ventilation, size) reduces still more its interaction with the environment. The following may be mentioned among those ideas:

Optimization of the energy yield of the boiler (99 percent), making thermal discharge negligible and improving the ratio between energy furnished and effluent discharge.

A very complete atmosphere recycling system that recondenses a large part of the vapors caused by evaporation of the water in the swimming pool, limits the emission of gaseous radioactive effluents by allowing the natural decrease in the radioactivity of those products to play its part.

Plugging of the circuits, which eliminates almost completely the need for constantly injecting water treatment products.

Very small amount of fuel (less than 1 metric ton a year).

Solid wastes and liquid effluents are entirely recovered and treated. Only the gaseous effluents are discharged into the atmosphere through filters. Their low level (around 90 curies a year of argon, 41.5 curies a year of tritium, 19 curies a year of rare gases and 4×10^{-3} curies a year of iodine) makes their effect imperceptible in comparison with natural radioactivity and confirms the conclusions of a comparative study of harmful effects of various energy sources made recently in Sweden. This study shows that nuclear risks are less than the accepted risks actually observed in present heating systems.

After storage in the AEC's swimming pools and as soon as a sufficient amount of these elements justifies it, spent fuel elements will be treated in a reprocessing center. This reprocessing may be regarded favorably, because:

The materials are not very different from the ones used in PWR [Pressurized Water Reactor] powerplants.

Their contamination level should be very low.

Shearing tests on fuel assemblies proved the feasibility of the processes.

Economy of the Line

This has given rise to a number of studies. Of course, rather great prudence should be observed with regard to estimates that still do not warrant any production. The costs of recently constructed research reactors and the results of calls for bids put out in the industry are used as a basis for investment calculations. It is still difficult to evaluate the profit to be expected from a production-line effect. Operating costs were estimated on the basis of three-person watch teams, a number determined by general considerations concerning safety of the facilities. A total personnel force of 25 persons seems sufficient.

But the most important unknown factor is still, undoubtedly, the value of fossil energy to be taken into account in economic comparisons. Under the October 1979 conditions, a 200-megawatt thermal plant operating basically was already certainly competitive. It may be thought that fossil fuel prices will tend to increase faster in the future than the cost of living, if only under the effect of more and more strict restraints on their quality (sulfur content, for example), in order to preserve the environment. A 100-megawatt thermal Thermos reactor becomes justifiable for a rise in the cost of energy in the realm of the foreseeable, if not a certainty, in the next 5 to 10 years.

Thus, an initial production was proposed without waiting, in order to have as soon as possible sufficient operating experience -- although few surprises are possible -- and especially in order to evaluate correctly the economy of the process and to have sufficiently early an answer to further brutal increases in the price of fuel, always possible.

The whole Thermos operation will require a total period on the order of 5 years to carry out construction and experimentation significantly. This accomplishment will also have the advantage of making it possible to train personnel capable of operating other facilities later.

French Regulations

The Interministerial Nuclear Safety Committee[3] consists of the prime minister and all the ministers and secretaries of state concerned: Interior, Economy, Budget, Environment and Human Ecology, Agriculture, Labor and [Employee] Participation, Health and Family, Industry, Transportation, Research. It is responsible for "coordinating activities" for the purpose of providing nuclear safety. It "adopts or prepares general measures required for accomplishing this mission."

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[3] Established by decree of 4 August 1975.

Regulatory Procedures

Every "basic nuclear plant" is designed, built and operated in accordance with the regulatory provisions in force. Thermos is one of them and is, therefore, subject to the following procedures:

Authorization Procedure

This procedure is defined by Decree No 63.1228 of 11 December 1963 (amended by Decree No 71.405 of 27 March 1973 and pertaining to nuclear plants) and specified by Ministerial Order of 12 July 1965 (JO [JOURNAL OFFICIEL] for 6 August 1965) detailing the procedure for local investigation prior to the establishment of a basic nuclear plant.

A request for authorization is examined from the point of view of nuclear safety by a group of experts, the standing groups of the Central Service for Safety of Nuclear Plants (SCSIN) and on the basis of the Preliminary Safety Report submitted by the operator at the time of requesting authorization. The project is discussed in detail during sessions of the standing groups, where the requestor is summoned. It is modifed by him in accordance with the remarks of these groups, which finally submit a report on the project to the chief of SCSIN who prepares the authorization decree, which is submitted, through the CIINB [Interministerial Commission on Basic Nuclear Plants], for signature by the ministers concerned.

Nuclear fuel loading and placing in normal operation are subject to approval by the minister of Industry, after an examination, in accordance with the same procedure as the standing groups, of the preliminary safety report, containing all data making it possible to justify completely the safety of the plant, and then of the final safety report, containing, in addition, the results of tests for placing the plant in operation.

A nuclear plant in operation is subjected to surveillance by specialized SCSIN inspectors under the Ministry of Industry and by agents of the Central Service for Protection against Ionizing Radiation (SCPRI) under the Ministry of Health and Family. Finally, at the end of the operating period of the reactor, the operations for finally shutting it down will also be subject to a specific authorization.

Procedure for Protection Against Ionizing Radiation and Effluent Discharge

French regulations consist of a complete, coherent set of precise specifications designed for limiting exposure of the inhabitants of the region to radiation by nuclear facilities and also exposure of the personnel of those facilities. The general principles determined by the French regulations (Decree 66-450 of 10 June 1966) are inspired, as they are in most of the countries having nuclear plants, by recommendations of the International Radiological Protection Commission (CIPR). These regulations specify, especially for exposure of the public to radiation, limits called "maximum permissible dose equivalents".

Pertinent authorization requests are submitted to the Ministry of Industry, which has them examined by the technical service of the Ministry of Health and Family, the SCPRI. These requests are subjected to public investigations.

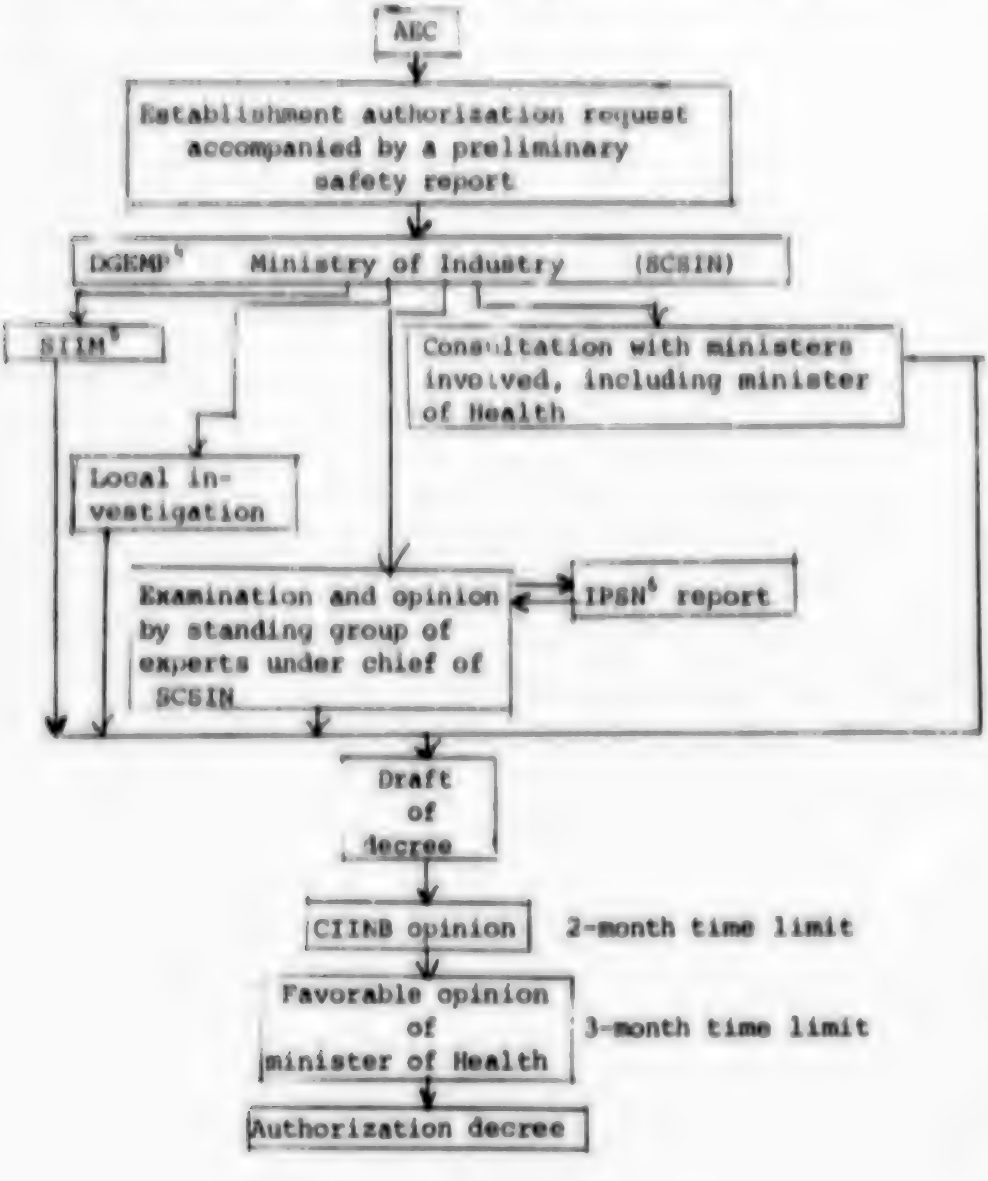
Discharges are authorized by interministerial orders signed by the minister of Industry, the minister of Interior, the minister of Agriculture, the minister of Health and Family, the minister of Environment and Human Ecology, and are published in the JOURNAL OFFICIEL. These orders specify the limits as well as the procedures for execution and for controlling the effluent discharges that the operator is authorized to make. These controls pertain to the discharges themselves and to the environment.

These discharge authorizations are always much lower than the values that would lead to radiation exposure equal to the limits specified for the general public. Moreover, nuclear plant operators make a constant effort to stay under these authorizations, following the advice of the CIPR in that respect, which recommends making discharges "as low as is reasonably possible."

In order to assure that these discharge limits are respected, the regulations set up their controls both by the operator himself who must, therefore, be provided with the necessary inspection equipment for this control and by the SCPRI. This agency, which, as has been said, is under the Ministry of Health and Family, is completely independent of the operation. It is empowered to "carry out all measures, analyses or dosages making it possible to determine radioactivity or ionizing radiation in the various places where they may present danger to the health of individuals and of the population and to ensure checking of the means of protection used and their effectiveness." The SCPRI has access in every circumstance to nuclear plants. The operator is, therefore, himself supervised by the SCPRI to which he regularly furnishes the results of his inspections.

Therefore, in France, there are indeed complete, but very complete, regulations in the nuclear field. Their strictness is not encountered for any other harmful effect. Therefore, Thermos, subjected to all these regulations, can find its place wherever its usefulness can be shown and this will be under conditions of safety and health very satisfactory to the population concerned.

Authorization Procedure for Establishing Basic Nuclear Plants


AEC
Establishment authorization request accompanied by a preliminary safety report
DGEMP[4] Ministry of Industry (SCSIN)
SIIM[5]
Consultation with ministers involved, including minister of Health
Local investigation
Examination and opinion by standing group of experts under chief of SCSIN
IPSN[6] report
Draft of decree
CIINB opinion
2-month time limit
Favorable opinion of minister of Health
3-month time limit
Authorization decree

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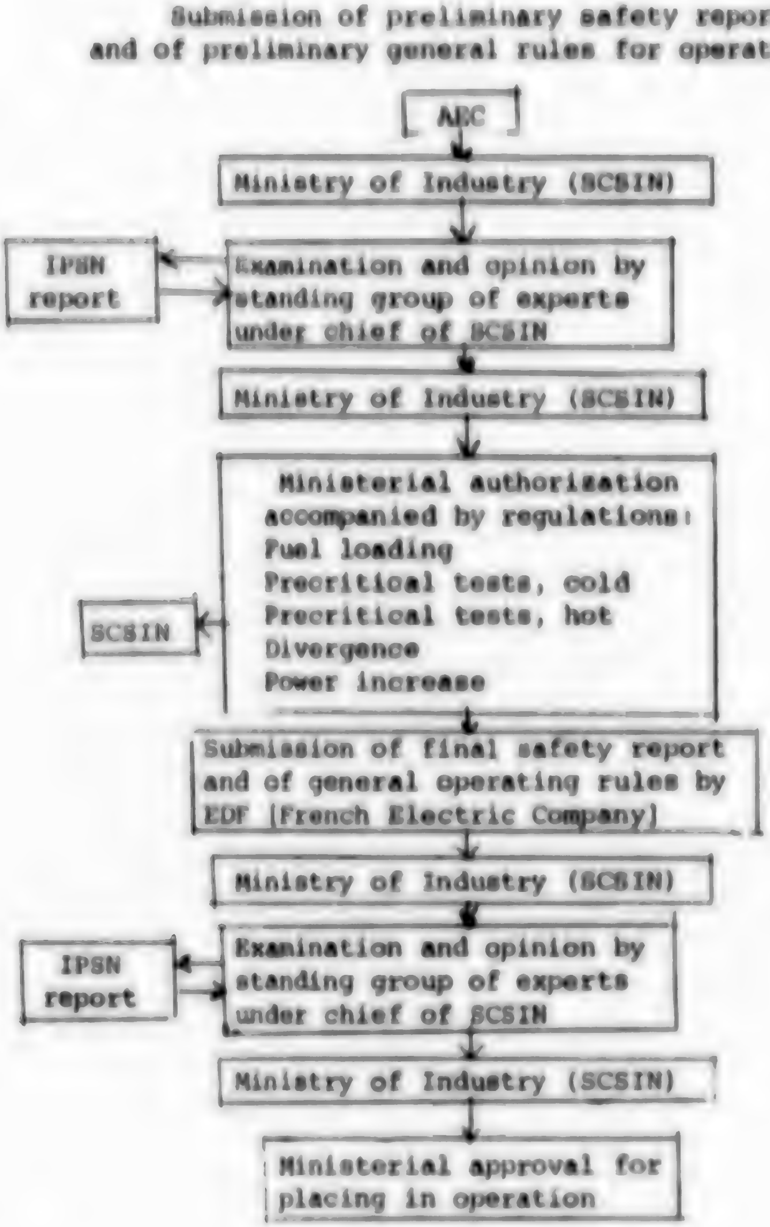
[4] General Directorate of Energy and Raw Materials

[5] Bureau of Industry and Mines

[6] Nuclear Protection and Safety Institute

Operation Authorization (Reactors)


Submission of preliminary safety report
and of preliminary general rules for operation
AEC
Ministry of Industry (SCSIN)
IPSN report
Examination and opinion by standing group of experts under chief of SCSIN
Ministry of Industry (SCSIN)
Ministerial authorization accompanied by regulations:
Fuel loading
Precritical tests, cold
Precritical tests, hot
Divergence
Power increase
SCSIN
Submission of final safety report and of general operating rules by EDF [French Electric Company]
Ministry of Industry (SCSIN)
IPSN report
Examination and opinion by standing group of experts under chief of SCSIN
Ministry of Industry (SCSIN)
Ministerial approval for placing in operation

10,042
CSO: 5100

INTERCHURCH PEACE COUNCIL: CHURCHES TO OPPOSE NUCLEAR WEAPONS

Rotterdam NRC HANDELSBLAD in Dutch 19 Sep 80 p 3

[Report on interview with B.J.Th. ter Veer by F.Ph. Groeneveld]

> [Text] The 14th national "peace week" begins next Sunday [21 September]. This church demonstration (organized by the Interchurch Peace Council [IKV], to which three big and six smaller churches belong) is being held for the fourth time under the motto: Help nuclear weapons out of the world, starting with the Netherlands.

Onderdendam, Groningen, 19 Sep--"It looks as though in the coming year we might get all the churches affiliated with us to go so far as to speak out definitively against the use and against the possession of nuclear weapons. That would be nice, but it is far from sufficient," said Ben ter Veer, chairman of the Interchurch Peace Council, during an interview with him at his home in the North Groningen town of Onderdendam concerning the IKV plans for 1980-1981.

"What is primarily involved is for the churches to dare to speak out in favor of a peace strategy of unilateral initiatives in order to get such a process underway in the direction of bilateral disarmament. As far as the Netherlands is concerned, such initiatives have a chance of success only if we not only reject a few atomic assignments here, but also become completely free of nuclear weapons."

Discussion of the justification or of the absolute inadmissibility of nuclear weapons is going around within the churches by fits and starts and very emotionally. Church congregations threaten to be split in conflicts, for while some see protection of Christian civilization and freedom of religion, if necessary with nuclear weapons, as a most sacred obligation, others feel that nuclear weapons are not admissible now or ever.

Moreover, the opponents feel that regarding Soviet communism as an absolute enemy is not consistent with the Christian terms of conciliation. Ter

Veer adds to this as a personal conviction: "I am not entirely blind; I do really see the dangers of communism. But I wonder where Christians get the right to hold that 'absolute evil' prevails in Russia, as if the humane impulse had completely died out there."

In the Opposition

"We are asking the churches to take a different position from heretofore," says Ter Veer. For this a real dialog is necessary, which consists of more than uttering platitudes or politely listening to each other. "The churches must go into the opposition, just as the churches in South America, from which we can learn a great deal, set themselves against the forces of oppression. The choice to do this is not easy; it may perhaps be extremely painful, because the churches could thereby lose their time-honored place in society."

Ben ter Veer emphasizes in this connection that the Interchurch Peace Council is not a radical nor a completely pacifist peace movement. But the churches could say of nuclear mass-destruction weapons, with the German theologian Gollwitzer, "We do not wish to be protected by such weapons," he feels.

Dr B.J.Th. ter Veer is a scientific employee of Prof Roling's well-known Polemological Institute in Groningen. As a social psychologist he is engaged there primarily in peace education, in developing and compiling study packets for secondary school use on problems of war and peace.

Conscientious Objection to Military Service

Ben ter Veer is not an outspoken antimilitarist. "I never thought about conscientious objection before," he says somewhat shamefacedly. "I simply served in the medical corps. But if I had to choose now whether or not to go into the service, I would refuse service on principle because of atomic weapons."

Much earlier, in Christian antiquity, which lasted until about the year 300, believers as a rule took no part in military service. But little remained of that primitive Christian pacifism when Christianity became more or less a state religion under Constantine the Great. Since then refusal of military service has been regarded as a sin by the church, which blesses weapons and offers prayers for victory in war.

Thus the "doctrine of a just war" grew up very early, a doctrine that according to Ter Veer is still very much alive and is followed, although often unconsciously, by almost all Christians, insofar as they are not, like the Quakers and Mennonites, absolute pacifists. By that doctrine* the church attempted to apply moral standards of good and evil to the problem of war.

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*See also: "Kernbewapening: Handreiking van de generale synode van de Nederlandse Hervormde Kerk voor een nieuw gesprek over het vraagstuk van de kernwapens" [Nuclear Arms: Manual of the General Synod of the Dutch Reformed Church for a New Discussion of the Qeustion of Nuclear Weapons], The Hague, 1979.

According to that old doctrine it is permissible to wage war a) if if war is legally declared, b) if there is a good purpose behind it, c) if a good result can be expected from it, d) if the weapons are not disproportionately violent, and e) if the war is directed exclusively against the military, i.e. not against the civilian population.

'Sin Against God'

The question now, according to Ter Veer, is whether the criteria of that doctrine can be met in the era of nuclear weaponry. A clear application of the doctrine of a just war is to be found in the condemnation, not as a matter of principle, of the use and possession of nuclear weapons. Selective use is permitted, especially against military targets. It is this application that fits excellently into the notion of deterrence. "But it is often not realized," says the chairman of the IKV, "that with the refinement of precision aiming it is getting to be regarded as an actual possibility again to carry on a limited nuclear war, and this increases the chance of such a war day by day."

Twenty years ago the Catholic Church characterized the use of nuclear weapons against open cities as a "sin against God." Since then, according to Ter Veer, there has been a definite development, especially under the influence of the American episcopate, toward absolute rejection of any use of nuclear weapons. A similar development is to be found within the churches in the Netherlands. But Ter Veer is not very well satisfied with the position of the World Council of Churches in Geneva. "In fact, Geneva is not yet opposing the continuing arms race strongly enough."

Because, according to the IKV's VREDESKRANT, there is no thought at the moment anywhere of serious negotiations concerning bilateral or multilateral disarmament, and because, when there have been serious negotiations on disarmament in past years they had no deterring effect on the arms race, the IKV feels that it must look to unilateral initiatives for disarmament. Not much optimism is felt about the working of parliamentary democracy since the disappointing Second Chamber debate in December 1979 on the modernization of nuclear weapons under NATO, nor about what Dutch governments could manage to get from their allies.

But that is not what the IKV is really concerned with now. The IKV considers it a much more important criterion how the maximum support can be given to the forces in other countries that are trying to persuade their own governments to adopt a different policy.

"What really helps the opposition groups in other countries is not Dutch governments' begging and pleading with their allies to do more toward arms control and disarmament, but a changed policy followed by the Netherlands itself (removal of the nuclear weapons). That really gives other citizens courage."

Practicable Course

"For the time being we in the IKV sill stick to the playing rules of parliamentary democracy," says Ben ter Veer. "But we are definitely not squeamish about putting on the greatest possible pressure. We will exert all the pressure we can. There are always a number of good ideas, of course, but what we stand for is putting real power behind them. We are not doing that in a hazy, unrealistic way. We indicate a 'practicable' course, a course by which the initiative for disarmament is gained and consequently freedom of movement. You do not sit and wait for each other any longer. You try by taking unilateral steps to get an arms reduction spiral in motion. Meanwhile you look to wee whether the other fellow reacts. If he reacts with significant steps, that can be taken into account in a positive sense in connection with your own steps. If he does not react, your own steps will decrease in importance and finally come to a stop. Then that approach has failed."

Ben ter Veer smiles. "This played-out approach, that is the nice thing about the IKV proposition."

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PPR WANTS NUCLEAR POWER STATIONS CLOSED

Rotterdam NRC HANDELSBLAD in Dutch 21 Aug 80 p 2

[Text] The PPR [Political Party of Radicals] wants the nuclear power stations in Borssele and Dodewaard closed during the next cabinet period from 1981 to 1985, and at the latest within 3 years. This point of view is expressed in a draft of the election program presented this afternoon.

Apart from closing these two stations the program also advocates terminating the ultracentrifuge factory in Almelo. The PPR also wants to stop all research into the application of nuclear energy. The election program is based on zero growth (stabilization of the national income) and takes into account the possibility of reversal of growth. To reach new goals the PPR wants to roll back government expenses and it wants general restraint on incomes.

The program advocates a drastic redistribution of incomes which should, in the long run, result in a so-called base income. The PPR wants to achieve a redistribution of paid and unpaid labor, which would assure everybody of an income. Socially necessary work should be accomplished through the introduction of social conscription.

As regards employment the program advocates expansion of the number of jobs--without mentioning numbers--through voluntary acceptance of fewer working hours, strong expansion of the system of work sharing on the one hand, and voluntary retirement (vut) combined with gradual pensioning on the other hand.

The election program is otherwise not documented by financial calculations of these wishes. Deputy Chairman Doctor E. Boeker writes in an explanation that this would not be feasible for a small party like the PPR but that it is also not necessary. "We must convince by our reasoning," he claims.

On matters of defense the program is in favor of repudiation of all nuclear tasks in line with the party's endeavour to eliminate nuclear arms from the Netherlands. The PPR persists in its policy of withdrawal from NATO, it believes that defense expenses should be structurally reduced, and the direct combat readiness of the Dutch armed forces sharply diminished.

Other striking features in the program are:

The distribution of houses on the basis of purchase and rent must be abolished. Houses and land should become the property of society.

Boards of directors of enterprises should be abolished in favor of self-government by councils of workers.

The voting age should be lowered to 16 years.

The right to vote and the right to be a candidate for political office should be given to foreigners who are legally in the Netherlands for more than 2 years.

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SWEDEN

BRIEFS

MINING AT ALTERNATIVE SITE--The Luossavaara-Kirunavaara Aktiebolag will probably start mining uranium, but not in Ranstad. According to information given to SVENSKA DAGBLADET the company will make an application at the end of the year for permission to start commercial activities at Pleutajokk near Arjeplog. It should be possible to produce 480 tons of uranium per year there--one-third of Swedish needs--and this would provide employment for 150 men. Luossavaara-Kirunavaara Aktiebolag has been prospecting in Pleutajokk since 1976. Test mining was carried out this summer and the results are very promising. It is estimated that one ton of rock will produce approximately one kilogram of uranium. The bottom limit for profitability has been estimated in this case as around 700 grams. Direct comparisons with Billigen cannot be made. The uranium deposit in Ranstad is one of the world's largest. The project there which had to be abandoned was intended to produce 470 tons of uranium per year. But to produce this quantity, three times as much rock would have to be mined as in Pleutajokk, where the concentration of uranium is much greater. [Text] [LD250947 Stockholm SVENSKA DAGBLADET in Swedish 23 Sep 80 p 1]

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